

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND**
Southern Division

DURR SYSTEMS, INC.,

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Plaintiff,

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v.

Case No.: GJH-18-2597

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EFC SYSTEMS INC.,

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Defendant.

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MEMORANDUM OPINION

This patent infringement litigation arises from a dispute between Plaintiff Durr Systems, Inc. (“Durr”) and Defendant EFC Systems, Inc. (“EFC”) related to patents for bell cups manufactured by Durr for use in spray painting systems. ECF No. 60. Pending is claim construction for the disputed terms of U.S. Patent Nos. 6,189,804 (“the ‘804 Patent”); 6,360,962 (“the ‘962 Patent”); 7,017,835 (“the ‘835 Patent”); 8,141,797 (“the ‘797 Patent”); and 8,590,813 (“the ‘813 Patent”) (collectively, the “Asserted Patents”). On August 9, 2021, the Court held a claim construction hearing. For the following reasons, the claim constructions adopted by the Court will govern this litigation.

I. BACKGROUND¹

A. Factual Background

Automotive and industrial paint application is accomplished by using rotary atomization

¹ These facts are taken from Plaintiff’s Amended Complaint, ECF No. 60, Defendant’s Answer, Affirmative Defenses, and Counterclaims, ECF No. 66, and Plaintiff’s Answer to Defendant’s Counterclaims, ECF No. 67, and, unless otherwise indicated, are undisputed.

paint systems. ECF No. 66 at 28.² These systems use a “bell cup” that attaches to the end of a turbine and rotates at high speeds. *Id.* at 28–29. Paint is injected into the center of the bell cup from the rear, and the bell cup’s rotation results in atomization of the paint into small droplets. *Id.* Many modern automobile and industrial equipment manufacturing facilities automate the paint application process by attaching turbines and bell cups to robotic paint equipment, such as robotic paint arms. *Id.* at 29.

Plaintiff Durr Systems (“Durr”) is a U.S. subsidiary of Dürr AG, a German company that has been manufacturing robotic paint systems and bell cups for automotive and industrial paint facilities for decades. ECF No. 67 ¶ 10. Durr sells, supplies, and services automated spray-painting systems within the United States for original and retro-fit installation in painting facilities. ECF No. 60 ¶ 9; ECF No. 67 ¶ 10. In connection with this business, Durr also sells and supplies replacement bell cups. ECF No. 60 ¶¶ 11, 13; ECF No. 67 ¶ 10.

Defendant EFC Systems, Inc. (“EFC”) was established in 1993 as an alternative source for industrial paint equipment. ECF No. 66 at 30. EFC does not manufacture or sell robotic arms, robotic control systems, or similar equipment. *Id.*; *see* ECF No. 67 ¶ 12. Instead, EFC claims to specialize in the design, construction, and manufacture of turbines, bell cups, and other critical parts for industrial paint equipment. ECF No. 66 at 30.

Durr is the alleged assignee of five different patents for rotary atomizers—*i.e.* bell cups—for use with particulate paints: the ‘804 Patent, the ‘962 Patent, the ‘835 Patent, the ‘797 Patent, and the ‘813 Patent. ECF No. 60 ¶ 35. As the assignee, Durr purports to be the owner of all rights, title, and interest in and to the Asserted Patents and to have the right to sue and recover

² Pin cites to documents filed on the Court’s electronic filing system (CM/ECF) refer to the page numbers generated by that system.

for infringement thereof. ECF No. 66 at 30–31; ECF No. 67 ¶¶ 14–19. The Asserted Patents are all in the same patent family and share a common specification. ECF No. 60 ¶¶ 36–37.

Durr has asserted that EFC’s manufacture and sale of certain bell cups has infringed Claim 1 of the ‘804 Patent, Claim 1 of the ‘962 Patent, Claim 6 of the ‘835 Patent, Claim 8 of the ‘797 Patent, and Claim 1 of the ‘813 Patent. ECF No. 66 at 32. Durr has also asserted that EFC has induced infringement of Claim 1 of the ‘797 Patent. *Id.* These claims all recite and require a bell cup that possesses specific features regarding the “overflow surface,” the “deflector,” and/or the “rear cover.” ECF No. 66 at 32; *see* ECF No. 60 ¶¶ 155, 165, 179, 191, 203, 227. EFC has responded to Durr’s allegations by arguing (1) that EFC’s products do not infringe the Asserted Patents, and (2) that the Asserted Patents are invalid. ECF No. 66 at 32–37, 39–41.

B. Procedural Background

On January 24, 2020, the parties filed their Joint Claim Construction Statement. ECF No. 62. Durr’s position is that all the claim terms have their plain and ordinary meanings, *see id.* at 1, while EFC’s position is that eight claim expressions have special or uncommon meanings, *see id.* at 2; ECF No. 62-3. These eight expressions are: (1) “paint;” (2) “particulate material” and “particulate paint;” (3) “substantially continuous [conical overflow surface];” (4) “conical [surface or overflow surface or front surface];” (5) “generally conical [overflow surface or surface]” and “substantially conical [overflow surface or front surface];” (6) “generally constant [flow angle/angle]” and “substantially constant [angle];” (7) “generally parallel” and “substantially parallel;” and (8) “rear cover attached to the bell cup” and “bell cup further having attached thereto a rear cover.” *See* ECF No. 62-3. Also on January 24, 2020, both Durr and EFC submitted their opening claim construction briefs. ECF No. 63; ECF No. 65.³ On June 25, 2020,

³ Durr’s opening claim construction brief was filed under seal. *See* ECF No. 64; ECF No. 85.

both Durr and EFC filed their responsive claim construction briefs, ECF No. 79; ECF No. 80; ECF No. 81. A claim construction hearing was held on August 9, 2021. ECF No. 120.

II. LEGAL STANDARD

“The purpose of claim construction is to ‘determin[e] the meaning and scope of the patent claims asserted to be infringed.’” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (alteration in original) (citation omitted). “When the parties raise an actual dispute regarding the proper scope of these claims, the court, not the jury, must resolve that dispute.” *Id.*; *see also Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 391 (1996) (holding that the interpretation of a claim term “is an issue for the judge, not the jury”); *Balt. Aircoil Co. v. SPX Colling Techs., Inc.*, No. CCB-13-2053, 2015 WL 5102872, at *1 (D. Md. Aug. 28, 2015) (“Patent claims are construed as a matter of law.”). However, Maryland’s local claim construction rules differ from those in the rest of the country in two material ways: (1) only Maryland has an asymmetrical disclosure of claim interpretations prior to claim construction briefing; and (2) Maryland specifically calls for disclosure of “special or uncommon meanings.” *Compare* Loc. R. 805 (D. Md.) (asymmetrical exchange of special or uncommon meanings), *with* Loc. Patent R. 6 (S.D.N.Y., E.D.N.Y.) (simultaneous exchange of terms), *and* Loc. Patent R. 3-1 (E.D. Tex.) (simultaneous exchange of terms and constructions). As this Court has noted in a previous letter order, “Maryland’s limited ‘special or uncommon meanings’ requirement is . . . notable, and by necessity indicates” that the parties “cannot include *all* terms that [they] believe need to be construed[.]” ECF No. 47 at 1 (emphasis in original). Instead, the parties may identify only “special or uncommon meanings.” *Id.* at 2. “These special or uncommon meanings may include constructions based on lexicography or disavowal and any terms that have a specific and special meaning or usage within a particular field that would not

be readily apparent to a layperson.” *Id.* at 2. Moreover, in response to a dispute between Durr and EFC, ECF No. 70; ECF No. 75; ECF No. 82, this Court later clarified that while “special or uncommon meanings” does include Industry Specific Meanings—*i.e.*, specific special meanings within the industry—“special or uncommon meanings” also includes “the broader category of meanings that would not be readily apparent to a layperson, but would be understood by ‘a person of ordinary skill in the art in question at the time of the invention[,]’” ECF No. 111 at 10–11 (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005)).

“[A] claim construction analysis must begin and remain centered on the claim language itself, for this is the language the patentee has chosen to particularly point out and distinctly claim the subject matter which the patentee regards as his invention.” *Source Vagabond Sys. Ltd. v. Hydrawpak, Inc.*, 753 F.3d 1291, 1299 (Fed. Cir. 2014) (cleaned up) (quoting *Innova/Pure Water, Inc v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)); *see also Phillips*, 415 F.3d at 1312 (“It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” (internal quotation marks and citation omitted)).⁴ “The presumption is that claim terms should be given their ‘ordinary and customary meaning,’ . . . and not a restrictive construction unless there is clear evidence to support it in the intrinsic evidence, or a broader meaning is specifically disclaimed during prosecution.” *Aventis Pharms. Inc. v. Amino Chems., Ltd.*, 715 F.3d 1363, 1375 (Fed. Cir. 2013) (quoting *Vitronics Corp. v. Conceptiontronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the application.” *Phillips*, 415 F.3d at 1313. However, “the person of

⁴ “The proper construction of a patent’s claims is an issue of Federal Circuit law[.]” *ContentGuard Holdings, Inc. v. Apple Inc.*, 701 F. App’x 957, 960 (Fed. Cir. 2017).

ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification” and the prosecution history. *Id.*

“In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of widely accepted meaning of commonly understood words.” *Id.* at 1314. In other words, when the plain meaning of a claim is immediately apparent because the claim does not use “technical terms of art,” the claim terms will not require “elaborate interpretation.” *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001).

When, however, the ordinary meaning of a claim term is not readily apparent and the Court must engage in further interpretation, “the court looks to ‘those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.’” *Phillips*, 415 F.3d at 1314 (quoting *Innova*, 381 F.3d at 1116). Such sources include “the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Id.* (citation omitted).

A. Claim Language

“[T]he claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Id.* For example, “the context of the surrounding words of the claim . . . must be considered in determining the ordinary and customary meaning of [claim] terms.” *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003); *see also Phillips*, 415 F.3d at 1314 (explaining that the context in which the word “baffle” was used in the relevant claim helped the Court to construe that term—the relevant claim “refer[ed] to ‘steel baffles,’ which strongly

implie[d] that the term ‘baffles’ does not inherently mean objects made of steel”).

Additionally, “[o]ther claims of the patent in question, both asserted and unasserted, can . . . be valuable sources of enlightenment as to the meaning of a claim term.” *Phillips*, 415 F.3d at 1314. Courts “presume, unless otherwise compelled, that the same claim term in the same patent or related patents carries the same construed meaning.” *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1334 (Fed. Cir. 2003); *see also Phonometrics, Inc. v. N. Telecom Inc.*, 133 F.3d 1459, 1465 (Fed. Cir. 1998) (“A word or phrase used consistently throughout a patent claim should be interpreted consistently.”). Thus, “the usage of a term in one claim can often illuminate the meaning of the same term in other claims.” *Phillips*, 415 F.3d at 1314; *Balt. Aircoil Co.*, 2015 WL 5102872, at *9 (“[T]he same terms appearing in different portions of the claims should be given the same meaning unless it is clear from the specification and prosecution history that the terms have different meanings at different portions of the claims.” (internal quotation marks and citations omitted)). However, despite this presumption, “there is no requirement that a claim term be construed uniformly, particularly if it would lead to a ‘nonsensical reading’” *Aventis Pharms. Inc.*, 715 F.3d at 1374 (citing *Microprocessor Enhancement Corp. v. Tex. Instruments, Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008)).

“Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.” *Phillips*, 415 F.3d at 1314. “There is a rebuttable presumption that different claims are of different scope.” *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1326 (Fed. Cir. 2003); *Laitram Corp. v. Morehouse Indus., Inc.*, 143 F.3d 1456, 1463 (Fed. Cir. 1998) (“[D]ifferent claims should be presumed to cover different inventions[.]”). Specifically, “when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or

infringement.” *Amgen Inc.*, 314 F.3d at 1326 (internal quotation marks and citation omitted). Moreover, “[t]he presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim. . . . This presumption is especially strong where the limitation in dispute is the only meaningful difference between an independent and dependent claim.” *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1374 (Fed. Cir. 2014) (internal quotation marks and citations omitted). However, “claim differentiation is not a hard and fast rule, and the presumption can be overcome by a contrary construction required by the specification or prosecution history.” *Id.*

B. Specification

In addition to evaluating disputed claim terms in the context of the claim language, “claims must be read in view of the specification, of which they are part.” *Phillips*, 415 F.3d at 1315 (internal quotation marks and citation omitted). “The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it. Thus, the specification is always relevant to the claim construction analysis.” *Vitronics Corp.*, 90 F.3d at 1582. In fact, the Federal Circuit has recognized that the specification “is the single best guide to the meaning of a disputed term.” *Id.*; *see also Phillips*, 415 F.3d at 1315 (“The specification is, thus, the primary basis for construing the claims.” (citation omitted)). “The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention [*i.e.*, the specification] will be, in the end, the correct conclusion.” *Phillips*, 415 F.3d at 1316 (citation omitted).

Beyond the specification being relevant to a court interpreting the ordinary and customary meaning of a claim term, “[t]he patent applicant may also define a claim term in the specification ‘in a manner inconsistent with its ordinary meaning.’” *Home Diagnostics, Inc. v.*

Lifescan, Inc., 381 F.3d 1352, 1355 (Fed. Cir. 2004) (quoting *Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1347 (Fed. Cir. 2003)). “However, the specification . . . only compel[s] departure from the plain meaning in two instances: lexicography and disavowal.” *GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014); *Aventis Pharms. Inc.*, 715 F.3d at 1373 (stating that, unless “the inventor acted as his own lexicographer or intentionally disclaimed or disavowed claim scope[,]” the specification “cannot be used to narrow a claim term to deviate from the plain and ordinary meaning”); *Home Diagnostics, Inc.*, 381 F.3d at 1357 (“A patentee may claim an invention broadly and expect enforcement of the full scope of that language absent a clear disavowal or contrary definition in the specification.”). As to lexicography, “the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.” *Phillips*, 415 F.3d at 1316. “Such special meaning, however, must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention.” *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998); *see also GE Lighting Sols., LLC*, 750 F.3d at 1309 (“To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term, and clearly express and intent to define the term.” (internal quotation marks and citation omitted)). As to disavowal, “the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor. In that instance[,] . . . the inventor’s intention, as expressed in the specification, is regarded as dispositive.” *Phillips*, 415 F.3d at 1316. Again, however, “disavowal requires that the specification . . . make clear that the invention does not include a particular feature.” *GE Lighting Sols., LLC*, 750 F.3d at 1309 (cleaned up) (quoting *SciMed Life Sys. Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d

1337, 1341 (Fed. Cir. 2001)).

Finally, while “[i]t is . . . entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description [*i.e.*, the specification] for guidance as to the meaning of the claims[.]” *Phillips*, 415 F.3d at 1317, “[i]t is improper for a court to add ‘extraneous’ limitations to a claim, that is, limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim.” *Hogana AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950 (Fed. Cir. 1993). “[A]n applicant is not required to describe in the specification every conceivable and possible future embodiment of his invention.” *Epistar Corp. v. Int’l Trade Comm’n*, 566 F.3d 1321, 1336 (Fed. Cir. 2009) (quoting *Cordis Corp. v. Medtronic AVE Inc.*, 339 F.3d 1352, 1365 (Fed. Cir. 2003)). Thus, “[i]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *GE Lighting Sols, LLC.*, 750 F.3d at 1309 (citation omitted); *Hill-Rom Servs., Inc.*, 755 F.3d at 1372 (“[E]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” (internal quotation marks and citation omitted)); *see also Epistar Corp.*, 566 F.3d at 1332 (“[T]here is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.” (internal quotation marks and citation omitted)).

C. Prosecution History⁵

“To construe claim language, the court should also consider the patent’s prosecution

⁵ The prosecution history contains “all express representations made by or on behalf of the applicant to the examiner to induce a patent grant Such representations include amendments to the claims and arguments made to convince

history, if it is in evidence.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996). “While the prosecution history lacks the clarity of the specification and thus is less useful for claim construction purposes’, . . . it still provides evidence of how the inventor intended the term to be construed.” *Aventis Pharms. Inc.*, 715 F.3d at 1373 (internal quotation marks and citations omitted). However, “the prosecution history may not be used to infer the intentional narrowing of a claim absent the applicant’s clear disavowal of claim coverage[.]” *Amgen Inc.*, 314 F.3d at 1327. In other words, “[d]uring prosecution, an inventor may surrender coverage of material that would otherwise be covered by a claim; however, the surrender must be clear and unmistakable.” *Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1307 (Fed. Cir. 2003)); *Omega Eng’g, Inc.*, 334 F.3d at 1324 (stating that the Federal Circuit has “declined to apply the doctrine of prosecution disclaimer where the alleged disavowal of claim scope is ambiguous”). “Such a disclaimer exists, for example, when a patentee explicitly characterizes an aspect of his invention in a specific manner to overcome prior art, . . . or when a statement is definitional[.]” *Balt. Aircoil Co.*, 2015 WL 5102872 at *1 (cleaned up) (citations omitted). In contrast, “[a] patentee’s discussion of the shortcomings of certain techniques is not a disavowal of the use of those techniques in a manner consistent with the claimed invention.” *Epistar Corp.*, 566 F.3d at 1335–36 (observing that “disparaging comments alone” nor “general comments distinguishing the prior art” were not necessarily enough to “show a manifest or express disavowal”); *Balt. Aircoil Co.*, 2015 WL 5102872 at *3 (“[P]rosecution disclaimer does not apply if the applicant simply describes features of the prior art and does not distinguish the claimed invention based on those features[.]” (internal quotation marks and citations omitted)). However, “[t]he court considers the

the examiner that the claimed invention meets the statutory requirements of novelty, utility, and nonobviousness.” *Jonsoon v. Stanley Works*, 903 F.2d 812, 818 (Fed. Cir. 1990) (ellipsis in original).

totality of the prosecution history, not just statements viewed in isolation.” *Balt. Aircoil Co.*, 2015 WL 5102872 at *1 (internal quotation marks and citations omitted).

D. Extrinsic Evidence⁶

Although the Federal Circuit has “emphasized the importance of intrinsic evidence in claim construction,” it has also “authorized district courts to rely on extrinsic evidence[.]” *Netcraft Corp. v. eBay, Inc.*, 549 F.3d 1394, 1397 (Fed. Cir. 2008). “The court may, in its discretion, receive extrinsic evidence in order to aid the court in coming to a correct conclusion as to the true meaning of the language employed in the patent.” *Markman*, 52 F.3d at 980 (internal quotation marks and citation omitted). However, the court should not use extrinsic evidence “for the purpose of varying or contradicting the terms of the claims.” *Id.* at 381. “While helpful, extrinsic sources . . . cannot overcome more persuasive intrinsic evidence.” *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009); *CAE Screenplates Inc. v. Heinrich Fiedler GMBH & Co.*, 224 F.3d 1308, 1318 (Fed. Cir. 2000) (“[I]n most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.” (citation omitted)). Rather, “[w]hen analysis of the intrinsic evidence alone does not resolve the ambiguities in the disputed claim term, the court may in its discretion turn to extrinsic evidence.” *Balt. Aircoil Co.*, 2015 WL 5102872 at *2.

⁶ Extrinsic evidence includes all the evidence external to the patent and the prosecution history, “including expert and inventor testimony, dictionaries, and learned treatises.” *Markman*, 52 F.3d at 980.

III. ANALYSIS OF THE DISPUTED TERMS

A. Paint

Claim Term	Durr's Proposed Construction	EFC's Proposed Construction
Paint	Plain and ordinary meaning	A material having fluid properties used in coating application including solvent based, water based, and powder coating
Court's Construction		
A material having fluid properties used in coating applications including solvent based and water based, but not including powder coating		

The core of the dispute over the construction of the first term is the parties' disagreement over whether the term "paint" should be construed to include "powder coating[.]"⁷ Durr's position is that "paint," as understood by a person of ordinary skill in the art, cannot consist of only solid material, *i.e.*, powder coating is not "paint" under the plain and ordinary meaning of "paint". ECF No. 63 at 19–20; ECF No. 80 at 15. EFC, in contrast, asserts that the proper construction of "paint" includes powder coating. ECF No. 65 at 15–17.

The Court first looks to the language of the claims at issue in order to consider "the context of the surrounding words of the claim[.]" *ACTV, Inc.*, 346 F.3d at 1088. The term "paint" is used in all of the asserted claims in this litigation; however, Claims 1 and 7 of the '835 Patent and Claim 1 of the '797 Patent provide the most helpful context when construing this term. *Omega Eng'g, Inc.*, 334 F.3d at 1334 (stating that courts "presume, unless otherwise compelled, that the same claim term in the same patent or related patents carries the same construed meaning."). All three of these claims refer to atomizing particulate paint into droplets. ECF No.

⁷ The parties seem to agree that paint has fluid properties, is used in coating applications, and can be, at least, solvent-based or water-based. Thus, the Court construes paint to include these characteristics.

1-5 at 9 (referencing “atomizing particulate paint droplets” in Claim 1 of the ‘835 Patent and stating that the “rotary bell cup atomizes particulate paint into droplets” in Claim 7 of the ‘835 Patent); ECF No. 1-6 at 10 (referencing “atomizing the metallic based particulate paint . . . such that 80% of the droplets are within” a certain size deviation). Droplets are commonly understood to refer to liquid. *See* ECF No. 125-1 at 18 (citing Dr. Dahm’s Deposition, 80:6–11, 16–18). Thus, the claim language supports Durr’s position that “paint” does not include powder coating, since a powder coating cannot be atomized into droplets.

The Court next turns to the specifications of the Asserted Patents because “claims must be read in view of the specification, of which they are part.” *Phillips*, 415 F.3d at 1315 (internal quotation marks and citation omitted). The specifications of all five Asserted Patents state that the invention is an improved rotary atomizer that “provides a more uniformed paint droplet size” and “provides several inventive features directed toward reducing deviation in paint droplet size[.]” ECF No. 1-3 at 7; ECF No. 1-4 at 7; ECF No. 1-5 at 7; ECF No. 1-6 at 8; ECF No. 1-7 at 7. Again “the term ‘droplets’ is generally reserved for liquid paint[.]” ECF No. 125-1 at 18 (citing Dr. Dahm’s Deposition, 80:6–11, 16–18). Thus, the patent specifications also support Durr’s interpretation that “paint” excludes powder coating.

Finally, the Court looks at the prosecution history of the Asserted Patents. EFC notes that, during the prosecution of the ‘962 Patent, the patentee referenced U.S. Patent No. 5,353,995 (“Chabert”) as one of the two closest prior art references. ECF No. 65 at 15; ECF No. 65-7 at 17–18. EFC then observes that Chabert is directed to a “[r]otating ionizer head for electrostatic application of an air-powder mixture, in particular for coating objects with powder paint[.]” ECF No. 65 at 15; ECF No. 65-11 at 2; *see also id.* at 4 (“The invention concerns a device for electrostatically spraying a powder coating product such as a paint[.]”). According to EFC, the

prosecution history's reference to Chabert, therefore, indicates that "paint" includes a powder coating.

However, the prosecution history of the Asserted Patents specifically disclaims such an interpretation. In the file history, the inventor unequivocally characterizes his invention as "applicable solely to the application of liquid paint" in order to distinguish it from "a prior art reference for applying powder paint[.]" *i.e.*, Chabert. ECF No. 65-6 at 12. Additionally, in response to a communication from the Examiner, the patent applicant argues its claims are allowable, and not anticipated by Chabert, because Chabert disclosed "a rotating ionizer head for [electrostatic] application of an air-powder mixture[.]" and the invention disclosed by the Asserted Patents is for use with liquid paint. *See, e.g.*, ECF No. 65-6 at 7 ("The definition of 'atomize' is 'to reduce (*a liquid*) to a spray.' Or 'to spray (*a liquid*) in this form.' . . . All of the pending claims specify an 'atomizer' or the step of 'atomizing.' Since the powder ionizer of Chabert does not 'atomize' and is not an 'atomizer,' these claims are not anticipated by Chabert." (emphasis added)). Consequently, the prosecution history reveals that the patentee "clear[ly] and unmistakabl[y]" disavowed the inclusion of powder coating within the term "paint[.]" *Anchor Wall Sys., Inc.*, 340 F.3d at 1307; *Baltimore Aircoil Co.*, 2015 WL 5102872 at *1 (stating that prosecution "disclaimer exists, for example, when a patentee explicitly characterizes an aspect of his invention in a specific manner to overcome prior art" (cleaned up) (citations omitted)).

Because, after considering the intrinsic evidence, it is unambiguous that "paint," as used in the relevant claims, does not include powder coating, the Court need not consider any extrinsic evidence offered by the parties. *CAE Screenplates Inc.*, 224 F.3d at 1318 (stating that, when an analysis of the intrinsic evidence resolves the ambiguity in the disputed claim term, "it

is improper to rely on extrinsic evidence.” (citation omitted)). The Court construes “paint” to mean: a material having fluid properties used in coating applications including solvent based and water based, but not including powder coating. *ContentGuard Holdings, Inc. v. Apple Inc.*, 701 F. App’x 957, 961 (Fed. Cir. 2017) (affirming a district court’s decision to reject both parties’ proposed constructions and provide its own construction).

B. Particulate Material/Particulate Paint

Claim Term	Durr’s Proposed Construction	EFC’s Proposed Construction
Particulate Material Particulate Paint	Plain and ordinary meaning	A [material or paint] that comprises solid particles
Court’s Construction		
A [material or paint] that includes solid particles		

The dispute over the second term is less clear. The parties did not explicitly address these terms at the hearing, and a large portion of the argument in the claim construction briefs appears to be based on a misconception that EFC’s proposed definition of “particulate material/paint” excludes liquid paint. ECF No. 63 at 22. EFC clarifies, however, in its Responsive Claim Construction brief that its proposal “does not mean that *only* solid materials are included[.]” ECF No. 79 at 13 (emphasis in original). Instead, according to EFC, “‘particulate’ means that solid particles must be included, but paint or material could also include liquid.” *Id.* The Court finds EFC’s definition to be supported by both the intrinsic and extrinsic evidence.

The Court notes first that the claim language does not provide much clarification beyond that particulate paint is a type of particulate material, and particulate paint can be metallic-based. ECF No. 1-3 at 9 (“particulate material, including particulate paint”); ECF No. 1-4 at 9 (same); ECF No. 1-5 at 9 (“capable of atomizing particulate material for use in a paint application

zone”); ECF No. 1-6 at 10 (“metallic based particulate paint”); ECF No. 1-7 at 9 (same). Thus, the Court turns to the patent specifications.

The patent specifications provide some additional clarity regarding the meaning of “particulate material/paint.” Specifically, the specifications support defining “particulates” as solid particles. For example, in the background of the invention, the patents refer to “applying paints with particulates, such as mica.” ECF No. 1-3 at 7; ECF No. 1-4 at 7; ECF No. 1-5 at 7; ECF No. 1-6 at 8; ECF No. 1-7 at 7. Thus, mica, which is a solid particle, is an example of a particulate. Additionally, in the summary of the invention, the patents state that, “[g]enerally, the improved atomizer provides a more uniformed paint droplet size, which in turn facilitates control of the particulates in order to assure proper orientation of the particulates[.]” ECF No. 1-3 at 7; ECF No. 1-4 at 7; ECF No. 1-5 at 7; ECF No. 1-6 at 8; ECF No. 1-7 at 7. Discussing the “orientation of the particulates” implies that particulates are solid particles. Finally, in the detailed description of the preferred embodiments, the patents state that “paint flow can be adjusted to ensure the particles are forced to lay flat[.]” once more reinforcing that particulates are solid particles. ECF No. 1-3 at 8; ECF No. 1-4 at 8; ECF No. 1-5 at 8; ECF No. 1-6 at 9; ECF No. 1-7 at 8. The Court, however, finds no additional clarity in the prosecution history as to the meaning of “particulate material/paint.”

After considering the intrinsic evidence, the Court finds that there is support for defining particulates as solid particles. Thus, the intrinsic evidence is consistent with EFC’s proposed construction of “particulate material/paint” as a material/paint that includes solid particles. However, some ambiguity remains. Consequently, the Court turns to the extrinsic evidence. *Balt. Aircoil Co.*, 2015 WL 5102872 at *2 (“When analysis of the intrinsic evidence alone does not resolve the ambiguities in the disputed claim term, the court may in its discretion turn to extrinsic

evidence.”).

The extrinsic evidence before the Court supports a conclusion that particulates are solid particles and thus “particulate material/paint” is a material/paint that includes solid particles. Specifically, the second edition of “Paint and Surface Coatings[.]” a book on the science and technology of paints and surface coatings from 1999, explains that the “[p]articulate nature of pigments” means that they “maintain[] a particulate structure throughout the coloration process and [are] insoluble.” ECF No. 65-15 at 38. This discussion of the insoluble nature and fixed structure of particulate materials indicates that particulates are defined as solid particles within the paint industry. Additionally, the same source describes the possible shapes of pigment particles, including spherical, nodular, cubic, needle-like, and plate-like, which also demonstrates that particulates are solid particles. *Id.* at 56–57. Durr does not offer any evidence that contradicts EFC’s position that particulates are solid particles.

Based on the intrinsic and extrinsic evidence described above, the Court construes “particulate material/paint” to mean a material/paint that includes solid particles.

C. Substantially Continuous [Conical Overflow Surface]

Claim Term	Durr’s Proposed Construction	EFC’s Proposed Construction
Substantially Continuous	Plain and ordinary meaning—to the extent ordinary meaning needs to be explained, “mostly continuous”	A single, uninterrupted surface that is smooth (<i>i.e.</i> , contains no hard transitions)
Court’s Construction		
A single, uninterrupted surface that is smooth (<i>i.e.</i> , contains no hard transitions)		

With respect to the third disputed term, “substantially continuous[.]” Durr argues that the term should be given its plain and ordinary meaning, which it contends is “mostly continuous[.]” ECF No. 63 at 23–25. Whereas EFC argues that more construction is needed to understand what

a person of ordinary skill in the art would understand “substantially continuous” to mean *in view of the intrinsic evidence*. ECF No. 65 at 19–21. Specifically, EFC urges that the specification and the prosecution history reveal a more specific meaning for “substantially continuous” than “mostly continuous[.]”

As an initial matter, the Court notes that “words of approximation, such as generally and substantially, are descriptive terms commonly used in patent claims to avoid a strict numerical boundary to the specified parameter.” *Anchor Wall Sys., Inc.*, 340 F.3d at 1310–11 (internal quotation marks and citation omitted). Thus, courts have regularly construed “generally” and “substantially” by replacing them with other similar non-specific terms. *See, e.g., LNP Eng’g Plastics, Inc. v. Miller Waste Mills, Inc.*, 275 F.3d 1347, 1354 (Fed. Cir. 2001) (“The meaning of the word ‘substantially’ is ‘largely but not wholly that which is specified.’”); *Liquid Dynamics Corp. v. Vaughn Co.*, 355 F.3d 1361, 1368 (Fed. Cir. 2004) (“The term ‘substantial’ is a meaningful modifier implying ‘approximate,’ rather than ‘perfect.’”). However, it is sometimes appropriate, based on the intrinsic evidence, to construe such words of approximation, such as “substantially[.]” with further specificity. *See, e.g., Exmark Mfg. Co. Inc. v. Briggs & Stratton Power Prods. Grp., LLC*, 879 F.3d 1332, 1345 (Fed. Cir. 2018) (construing “substantially straight” portions of the baffle, based on the claims and specification, to mean “sufficiently straight to connect two arcuate portions of the baffle”); *Cordis Corp.*, 339 F.3d at 1360 (stating that, while the term “substantially uniform” means “largely or approximately uniform[.]” based on the written descriptions in the asserted patents, the “substantially uniform” limitation must also be more narrowly construed to “require[] that the thickness of the wall surface be sufficiently uniform along its length and between members to allow uniform expansion of the stent[.]” and stating that, based on the prosecution history, the owner of the patent “disclaimed

coverage of any device with a variation of at least 100 percent”).

Looking first to the claim language, the disputed term “substantially continuous [conical overflow surface]” appears in Claims 1 and 8 of the ‘835 Patent, but only Claim 1 provides helpful context. ECF No. 1-5 at 9. Claim 1 states that the patented rotary bell cup will comprise of “a substantially continuous conical overflow surface providing laminar flow for particulate material[.]” *id.*, where laminar flow is non-turbulent flow. *See* ECF No. 124-1 at 14; ECF No. 126-1 at 8 (defining “laminar flow” as “fluid following smooth paths in layers, with each layer moving smoothly past the adjacent layers with little or no mixing[.]”). Thus, the claim language surrounding the disputed term supports that “substantially continuous[.]” as understood by a person of ordinary skill in the art, means an uninterrupted, smooth surface—*i.e.*, a surface with no hard transitions—since an interrupted surface with hard transitions would likely cause non-laminar flow. *See* ECF No. 1-5 at 7 (“The bell cup is designed to reduce flow deviations of the paint as it travels . . . in order to provide laminar flow of the paint across the overflow surface”).

The patent specification provides further clarity. While the specification does not specifically use the term “substantially continuous [conical overflow surface,]” it describes the overflow surface as “a smooth continuous surface[.]” *Id.* Additionally, the specification describes the inventive aspects of the bell cup as including a conical surface that “is continuous and smooth from the deflector **40** to the spray edge[.]” *Id.* at 8. Finally, none of the illustrative figures included in the patent specification disclose an overflow surface that is not a single, uninterrupted surface that is smooth (*i.e.*, without hard transitions). *Id.* at 2 (“30” on the drawing); *id.* at 4 (same); *id.* at 5 (“126” on Figure 5); *id.* at 6 (“130” on Figure 6). Thus, the specification supports construing “substantially continuous” as a single, uninterrupted surface that is smooth (*i.e.*, that contains no hard transitions). Such a construction “stays true to the claim

language and most naturally aligns with the patent’s description of the invention” and thus is likely the “correct conclusion[.]” *Phillips*, 415 F.3d at 1316 (citation omitted).

Finally, the Court reviews the prosecution history. In the prosecution history of the related U.S. Patent Application No. 09/769,707 (“the ‘707 Application”),⁸ the patent applicant stated that “the bell cup is designed to reduce flow deviations of the paint[,] . . . in order to provide laminar flow[,] . . . by providing a smooth continuous overflow surface[.]” ECF No. 65-9 at 80. Such a description is consistent with the language in the patent specification, ECF No. 1-5 at 7–8 (describing the overflow surface as smooth and continuous), as well as the claim language itself, ECF No. 1-5 at 9 (“a substantially continuous conical overflow surface providing laminar flow for particulate material”). Additionally, the patent examiner stated in its Reasons for Allowance that: “[P]rior art of record does not disclose or suggest a paint spray zone for applying a particulate paint including particulates and a solvent with rotary atomizers each *having a bell cup including a substantially (smooth) continuous conical overflow surface* (extending to a circular spray edge) providing laminar flow[.]” ECF No. 65-9 at 93 (emphasis added). Thus, the patent examiner indicated that “substantially continuous” was intended to mean “smooth[.]” *Arendi S.A.R.L. v. Google LLC*, 882 F.3d 1132, 1136 (Fed. Cir. 2018) (“[T]he examiner’s ‘Reasons for Allowance’ made clear that the examiner and the applicant understood what the applicant had changed, and what the claim amendment required.”). Consequently, the prosecution history also supports construing “substantially continuous [conical overflow surface]” as a single, uninterrupted surface that is smooth (*i.e.*, no hard transitions).

Based on the intrinsic evidence provided by the parties, the Court construes “substantially

⁸ The ‘707 Application, which issued as U.S. Patent No. 6,623,561, is an application related to the Asserted Patents’ family—it is a division application of the ‘804 Patent. ECF No. 65-9 at 5. Thus, its prosecution history is relevant to the meaning of claim terms in the Asserted Patents. *Aventis Pharms. Inc.*, 715 F.3d at 1375 (“A court can look to the prosecution of related patents for guidance in claim construction.”).

continuous” to mean a single, uninterrupted surface that is smooth (*i.e.*, no hard transitions). The Court need not review any extrinsic evidence. *CAE Screenplates Inc.*, 224 F.3d at 1318.

D. Conical [Surface or Overflow Surface or Front Surface]

Claim Term	Durr’s Proposed Construction	EFC’s Proposed Construction
Conical	Plain and ordinary meaning—to the extent ordinary meaning needs to be explained, “resembling a cone in shape”	A surface that consists of a cone shape, <i>i.e.</i> , a surface which tapers, with a constant slope, from a circle towards a point
Court’s Construction		
Plain and ordinary meaning		

The parties’ dispute around the term “conical” is focused on whether “conical” should be construed to have its precise geometric definition. Durr argues that there is no need for an elaborate construction and that the ordinary meaning of conical—*i.e.*, resembling a cone in shape—is a sufficiently clear construction. ECF No. 63 at 20. In contrast, EFC argues that “the terms ‘cone’ and ‘conical’ are known as geometric terms that have a specialized meaning in the art, which provides for a shape that includes a surface which tapers, with a constant slope, from a circle towards a point.” ECF No. 65 at 21–22.

A cone is a widely recognized shape. Even if a layperson had not encountered a cone in a math class during their childhood—which a significant number probably have—most people have encountered traffic cones or ice cream cones or recognize that party hats and megaphones are examples of conical objects. In other words, “conical” is not a “technical term[] of art” and does not require elaborate interpretation. *Brown*, 265 F.3d at 1352. Instead, it is readily apparent, even to a layperson, that the plain and ordinary meaning of conical is “resembling a cone in shape[.]”

EFC has not provided any intrinsic or extrinsic evidence that justifies departing from the

commonly understood meaning of “conical”. At most, EFC argues that the patent specifications describe a conical surface as a smooth and continuous surface with a constant flow angle. ECF No. 65 at 23; *see* ECF No. 1-3 at 8 (“Because the conical surface **30** is continuous and smooth from the deflector **40** to the spray edge **32** and has a constant angle α , the paint flow rate to the spray edge is constant.”); ECF No. 1-4 at 8 (same); ECF No. 1-5 at 8 (same); ECF No. 1-6 at 9 (same); ECF No. 1-7 at 8 (same). However, this description does not justify construing conical to have a highly specific geometric definition. Rather, the specifications’ description of a conical surface aligns with what a layperson would understand conical to mean. EFC’s extrinsic evidence is similarly unpersuasive. EFC offers definitions from a mathematics dictionary and a geometry textbook but fails to explain why such sources would be used by a person of ordinary skill in the art relevant to this patent dispute.

The Court finds that the ordinary meaning of “conical” as understood by a person of skill in the art is “readily apparent even to lay judges,” and, thus, the construction of “conical” “involves little more than the application of [the] widely accepted meaning of [such a] commonly understood word[.]” *Phillips*, 415 F.3d at 1313. Consequently, the Court construes “conical” to have its plain and ordinary meaning.

E. Generally Conical [Overflow Surface or Surface] or Substantially Conical [Overflow Surface or Front Surface]

Claim Term	Durr’s Proposed Construction	EFC’s Proposed Construction
Generally Conical Substantially Conical	Plain and ordinary meaning—to the extent ordinary meaning needs to be explained, “mostly conical”	A surface that consists of one or more conical portion(s) but without undulations or curved portions (<i>e.g.</i> , a surface consisting of portions of two cones)
Court’s Construction		
A surface that consists of one or more conical portions but without undulations or curved portions (<i>e.g.</i> , a surface consisting of portions of two cones, etc.)		

The next disputed term is “generally/substantially conical.” Again, Durr argues that this disputed term should be given its plain and ordinary meaning, which it interprets to be “mostly conical[.]” ECF No. 63 at 28. EFC, however, relies on the intrinsic evidence to define “generally/substantially conical” as consisting of “one or more conical portion(s) but without undulations or curved portions.” ECF No. 65 at 24–28. The Court adopts EFC’s construction.

EFC’s proposed construction consists of two parts: (1) a “generally/substantially conical” surface is a surface that consists of one or more conical portions; and (2) a “generally/substantially conical” surface does not have undulations or curved portions. The Court addresses each part in turn.

1. One or More Conical Portions

The claim language and prosecution history indicate that a “generally/substantially conical” surface can include one or more conical portions.

In determining whether “generally/substantially conical” is appropriately construed as consisting of one or more conical portions, the Court first looks to the claim language of the Asserted Patents. Claims 8 and 14 of the ‘797 Patent provide the most clarity as to the meaning

of “generally/substantially conical.” Claim 8 describes a bell cup with a “central flat portion leading to a substantially conical overflow surface” where the “substantially conical overflow surface extends from the central flat portion substantially to the spray edge[.]” ECF No. 1-6 at 10. Claim 14 then further limits the “substantially conical overflow surface” limitation of Claim 8 to a single cone shape: “A rotary atomizer as in claim 8, wherein the substantially conical overflow surface defines substantially a single cone shape that extends from the central flat portion to the spray edge.” *Id.* Because “[t]he presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim[.]” the limitation from Claim 14—*i.e.*, the dependent claim—that the “substantially conical overflow surface” consist of “substantially a single cone shape” implies that the “substantially conical overflow surface” from Claim 8—*i.e.*, the independent claim—can consist of one *or more* conical portion(s). *See Hill-Rom Servs., Inc.*, 755 F.3d at 1374 (noting that this presumption is strongest when, as here, the limitation is “the only meaningful difference between an independent and dependent claim”).

The Court next turns to the specification and the prosecution history, and, although the specification provides no further clarity, the prosecution history supports construing a “generally/substantially conical” surface as a surface consisting of one or more conical portions. During the prosecution of the ‘962 Patent, the patent applicant stated that “[i]t should be understood to one of skill in that art that ‘generally constant’ as used in the subject application can also include small deviations from a constant flow angle, which include, for example, *a double conical overflow surface* defining a constant or generally constant angle.” ECF No. 65-7 at 9 (emphasis added). Because Claim 1 of the ‘962 Patent includes the limitation that the bell cup include “a generally conical overflow surface having a generally constant flow angle[.]”

ECF No. 1-4 at 9, and the patent applicant has specified such limitation includes a double conical overflow surface, ECF No. 65-7 at 9, the Court concludes that “a generally conical overflow surface” is a surface that consists of one or more conical portions.

Finally, although the Court’s construction is based on the claim language of the ‘797 Patent and the prosecution history of the ‘962 Patent, because courts “presume, unless otherwise compelled, that the same claim term in the same patent or related patents carries the same construed meaning[.]” the Court construes “substantially conical [overflow surface or surface or front surface]” to mean a surface that consist of one or more conical portions regardless of the claim in which that term appears.⁹ See *Omega Eng’g, Inc.*, 334 F.3d at 1334.

2. No Undulations or Curved Portions

While the Court again first looks to the claim language to analyze whether the limitation that a surface be “generally/substantially conical” excludes surfaces that have undulations or curved portions, the claim language fails to provide any additional clarity in this instance. The claim language in and of itself neither requires nor precludes such a construction. However, as discussed above, a “person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent,” including the specification and the prosecution history. *Phillips*, 415 F.3d at 1313.

Thus, the Court looks to the specifications. The specifications of the Asserted Patents distinguish between “generally conical” shaped surfaces and “rounded” surfaces. In the description of the preferred embodiments of the invention, the patentee describes “a generally conical rear surface **144** which extends to a generally rounded central rear surface **142**[.]” ECF

⁹ Because the intrinsic evidence resolves any ambiguity as to whether a “generally/substantially conical” surface can consist of more than one conical portion, a review of the extrinsic evidence is unnecessary. *CAE Screenplates Inc.*, 224 F.3d at 1318.

No. 1-3 at 8; ECF No. 1-4 at 8; ECF No. 1-5 at 8; ECF No. 1-6 at 9; ECF No. 1-7 at 8. This description is then illustrated in Figure 5. ECF No. 1-3 at 5; ECF No. 1-4 at 5; ECF No. 1-5 at 5; ECF No. 1-6 at 6; ECF No. 1-7 at 5. From the illustration, it is clear that the “rounded central rear surface[.]” #142, is curved, while the “generally conical rear surface” is not. ECF No. 1-3 at 5; ECF No. 1-4 at 5; ECF No. 1-5 at 5; ECF No. 1-6 at 6; ECF No. 1-7 at 5. Because the specifications differentiate a “generally conical” surface from a “generally rounded” surface, which is curved, the specifications support construing “generally conical” as meaning without curved portions.¹⁰

Finally, the Court looks to the prosecution history. During the prosecution of the Asserted Patents, the patent applicant distinguished the claimed invention from prior art, specifically from U.S. Patent No. 4,838,487 (“Schneider ‘487”). By distinguishing the Asserted Patents from the bell cup disclosed in Schneider ‘487, the patent applicant made clear that “substantially conical” does not include undulations or curved portions. First, during the prosecution of the ‘797 Patent, the patent applicant stated that:

Schneider [‘487] is inconsistent with the clear meaning of the phrase “substantially conical.” . . . While applicants agree that “substantially” is a broad term generally, *the insertion of “substantially” prior to “conical” does not so broaden “conical” to read upon the undulating surface* disclosed by Schneider [‘487]. In fact, the Examiner’s interpretation essentially reads out the meaning of “conical” entirely. Schneider [‘487] simply fails to teach or suggest in any meaningful way a “substantially conical overflow surface extending from the central flat portion to the spray edge.” . . . More specifically, as noted above, Schneider [‘487] discloses *an undulating bell cup that is not “substantially conical.”*

¹⁰ Additionally, the specifications provide further support for construing “generally/substantially conical” surfaces to exclude undulating surfaces or surfaces with curved portions because the specifications only demonstrate overflow surfaces that do not undulate and do not have curved portions. ECF No. 1-3 at 2–6; ECF No. 1-4 at 2–6; ECF No. 1-5 at 2–6; ECF No. 1-6 at 2, 4–7; ECF No. 1-7 at 2–6. While “it is improper to read limitations from a preferred embodiment described in the specification . . . into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited[.]” *GE Lighting Sols., LLC*, 750 F.3d at 1309, the intrinsic evidence does support excluding surfaces with undulations or curved portions from the definition of “generally/substantially conical” in the instant case. See ECF No. 65-8 at 17–19, 51 (excerpts from the prosecution history supporting this construction of “generally/substantially conical”).

ECF No. 65-8 at 17–19 (emphasis added). Thus, the prosecution history unambiguously precludes construing a “substantially conical” surface to include an undulating surface. *Anchor Wall Sys., Inc.*, 340 F.3d at 1307; *see also Baltimore Aircoil Co.*, 2015 WL 5102872 at *1 (stating that a prosecution disclaimer exists “when a patentee explicitly characterizes an aspect of his invention in a specific manner to overcome prior art”).

Additionally, also during the prosecution of the ‘797 Patent, the patent applicant distinguished Schneider ‘487 from the claimed invention by stating that “[i]n contrast to a ‘substantially conical overflow surface extending from the central flat portion to the spray edge,’ any ‘substantially conical’ portion of the atomizer allegedly disclosed by Schneider [‘487] does not ‘extend . . . to the spray edge.’” ECF No. 65-8 at 51 (emphasis in original). Thus, by emphasizing that any “substantially conical” portion of the Schneider ‘487 bell cup—which, as discussed above, can include multiple conical portions—did not extend to the spray edge, the patent applicant focused on the portion of the Schneider ‘487 bell cup overflow surface that approaches the spray edge, which is the curved portion of the bell cup overflow surface. *See id.* (#24.2 in the Figure). In other words, the patent applicant has indicated that the curved portion of the Schneider ‘487 bell cup is not “substantially conical[.]” This provides further support for construing a “generally/substantially conical” surface to exclude surfaces with curved portions.

Therefore, based on evidence from the specification and the prosecution history, the Court construes a “generally/substantially conical” surface to exclude surfaces with undulations or curved portions.¹¹

In sum, the Court construes a “generally/substantially conical” surface to mean a surface that consists of one or more conical portions but without undulations or curved portions (*e.g.*, a

¹¹ The Court need not review the extrinsic evidence before settling on this construction. *CAE Screenplates Inc.*, 224 F.3d at 1318.

surface consisting of portions of two cones, etc.).

F. Generally Constant [Flow Angle/Angle] or Substantially Constant [Angle]

Claim Term	Durr’s Proposed Construction	EFC’s Proposed Construction
Generally Constant Substantially Constant	Plain and ordinary meaning—to the extent ordinary meaning needs to be explained, “mostly constant”	Consisting of one or more distinct angles which neither vary continuously nor oscillate, and which do not form a lip
Court’s Construction		
Consisting of one or more distinct angles, which neither vary continuously or oscillate, and which do not form a lip		

The sixth disputed term is “generally/substantially constant” angle or flow angle. Durr again argues that this disputed term should be given its plain and ordinary meaning, which it interprets to be “mostly constant[.]” ECF No. 63 at 32–33. In contrast, EFC argues that, based on the intrinsic evidence, a “generally/substantially constant” angle consists of one or more distinct angles, which neither vary continuously nor oscillate, and which do not form a lip. ECF No. 65 at 28–33. After reviewing the relevant evidence, the Court again adopts EFC’s construction.

EFC’s proposed construction consists of three parts: a “generally/substantially constant” angle (1) consists of one or more distinct angles; (2) which neither vary continuously nor oscillate; and (3) which do not form a lip. The Court addresses each part in turn.

1. Consists of One or More Angles

First, in light of the claim language and the prosecution history of the Asserted Patents, a person of ordinary skill in the art would understand a “generally/substantially constant” angle to allow for more than one distinct angle.

As an initial matter, based on the specifications of the Asserted Patents, a “constant” angle or flow angle is a single, unchanging angle. For example, the description of the preferred

embodiment states that: “Between the perpendicular surface **28** and the spray edge **32**, the overflow surface **30** has a smooth continuous surface of a constant flow angle α relative to the annular spray edge” and that α is most preferably 28.25 degrees. ECF No. 1-3 at 7; ECF No. 1-4 at 7; ECF No. 1-5 at 7; ECF No. 1-6 at 8; ECF No. 1-7 at 7. This description makes clear that a constant flow angle is a single angle α , that angle preferably being 28.25 degrees. The illustration of the described preferred embodiment, Figure 2, further emphasizes this point in that it demonstrates a single, unchanging flow angle. ECF No. 1-3 at 4; ECF No. 1-4 at 3; ECF No. 1-5 at 3; ECF No. 1-6 at 4; ECF No. 1-7 at 3. The Court thus must determine how adding a term of approximation, *i.e.*, “generally” or “substantially[,]” before “constant” impacts its meaning.

First, looking to the claim language, the claim language of the ‘804 Patent provides the most clarity as to the proper construction of a “generally/substantially constant” angle. Claim 1 of the ‘804 Patent, which is an independent claim, includes the limitation that the claimed bell cup must have a “generally conical overflow surface having a *generally constant flow angle* relative to the atomizing edge[.]” ECF No. 1-3 at 9 (emphasis added). Claim 3, a dependent claim, then further limits the claimed invention to a “bell cup of claim 1 wherein the flow angle is more than 60 degrees *at all points* between the deflector and the atomizing edge.” *Id.* (emphasis added). Thus, the bell cup covered by Claim 3 of the ‘804 Patent must have a “generally constant flow angle” that is “more than 60 degrees at all points between the deflector and the atomizing edge.” *Id.* The use of the phrase “at all points” would be unnecessary if a “generally constant” angle could only consist of a single angle, as is true of a “constant” angle. Thus, the claim language supports construing a “generally/substantially constant” angle as encompassing more than one angle.

This construction is further supported by the prosecution history. During the prosecution

of the '962 Patent, the patent applicant explained that “[i]t should be understood to one of skill in the art that ‘generally constant’ as used in the subject application can also include small deviations from a constant flow angle, which include, for example, a double conical overflow surface defining a constant or generally constant angle.” ECF No. 65-7 at 9. Consequently, the prosecution history also makes clear that a “generally/substantially constant” angle may consist of one or more angles.

The Court thus, based on the intrinsic evidence,¹² construes a “generally/substantially constant” angle broadly enough to allow for the presence of one or more angles.

2. Angles Neither Vary Continuously Nor Oscillate

While a “generally/substantially constant” angle may consist of one or more angles, interpreting the disputed term in view of the specifications of the Asserted Patents, a “generally/substantially constant” angle may not vary continuously nor oscillate.¹³ First, the specification defines the term “constant[,]” albeit in a different context, as meaning “does not oscillate[,]” which supports finding that a person of ordinary skill in the art would interpret a “generally/substantially constant” angle to exclude an angle that oscillates. ECF No. 1-3 at 8 (“[T]he paint flow rate to the spray edge is constant (*i.e.*, does not oscillate).”); ECF No. 1-4 at 8 (same); ECF No. 1-5 at 8 (same); ECF No. 1-6 at 9 (same); ECF No. 1-7 at 8 (same). Additionally, the specifications provide no evidence that a person of ordinary skill in the art would construe a “generally/substantially constant” angle to include continuously varying angles. None of the illustrations or descriptions in the specification disclose a

¹² A review of the extrinsic evidence is unnecessary as to this portion of the construction. *CAE Screenplates Inc.*, 224 F.3d at 1318.

¹³ Neither the claim language nor the prosecution history provide any clarity as to whether a “generally/substantially constant” angle can vary continuously or oscillate.

“generally/substantially constant” angle that continually varies. *Phillips*, 415 F.3d at 1316 (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention [*i.e.*, the specification] will be, in the end, the correct conclusion.” (citation omitted)). The Court thus construes “generally/substantially constant” to mean that the angle cannot vary continuously nor oscillate.

3. Angles Do Not Form a Lip

Finally, the prosecution history of the Asserted Patents clearly disclaims the inclusion of a lip within the meaning of a “generally/substantially constant” angle.¹⁴

First, in a declaration submitted during the prosecution of the ‘804 Patent, the inventor states: “[W]e have reduced particle size deviation by *eliminating the lip* at the atomizing edge of the bell cup. In the claims, *this is described as a ‘generally constant flow angle.’*” ECF No. 65-6 at 12 (emphasis added). Thus, for the purpose of overcoming prior art, the inventor clearly and unmistakably excludes a surface with a lip from the scope of a surface with a “generally/substantially” constant angle. *Anchor Wall Sys., Inc.*, 340 F.3d at 1307; *Balt. Aircoil Co.*, 2015 WL 5102872 at *1; *see* ECF No. 1-3 at 7 (explaining that in the prior art bell cups, “[a]t or near the atomizing edge, the angle of the overflow surface relative to the axis of the bell cup decreases sharply to form a lip adjacent the atomizing edge”); ECF No. 1-3 at 7 (same); ECF No. 1-4 at 7 (same); ECF No. 1-5 at 7 (same); ECF No. 1-6 at 8 (same); ECF No. 1-7 at 7 (same).

Additionally, during the prosecution of the ‘962 Patent, the patent applicant again indicated that a surface with a lip is not a surface with a “generally/substantially constant” angle. In particular, the patentee distinguishes the claimed bell cups from the prior art bell cups shown

¹⁴ This interpretation does not contradict the claim language nor the specifications of the Asserted Patents.

in U.S. patent No. 5,707,009 (“Schneider ‘009”) by stating “Schneider [‘009] fails to disclose an overflow surface that includes a generally constant flow angle.” ECF No. 65-7 at 18. Looking at the illustration of Schneider ‘009, the majority of the overflow surface has a single, unchanging angle, however, near the atomizing edge, the angle changes sharply relative to the axis of the bell cup to form a lip. ECF No. 65-23 at 2. Thus, the characterization of Schneider ‘009 as not including an overflow surface with a generally constant flow angle provides further support that a “generally/substantially constant” flow angle cannot include a lip. The Court thus construes “generally/substantially constant” angle as precluding the inclusion of a lip.

In sum, based on the above intrinsic evidence, the Court construes a “generally/substantially constant” angle or flow angle to mean consisting of more or more distinct angles, which neither vary continuously nor oscillate, and which do not form a lip.

G. Generally Parallel or Substantially Parallel

Claim Term	Durr’s Proposed Construction	EFC’s Proposed Construction
Generally Parallel Substantially Parallel	Plain and ordinary meaning—to the extent ordinary meaning needs to be explained, “mostly parallel”	Spaced equally from one another across all or the majority of the opposing surfaces
Court’s Construction		
Plain and ordinary meaning		

The dispute around the seventh term, “generally/substantially parallel,” centers on whether the term encompasses surfaces that are spaced apart by a distance that changes imperceptibly. ECF No. 63 at 33; ECF No. 65 at 63. EFC argues that parallel is a geometric term that requires the surfaces to be “everywhere equally distant[,]” and that this limitation is incorporated into the meaning of “generally/substantially parallel.” ECF No. 65 at 33. Durr, however, argues that “generally/substantially parallel” is not so limited. ECF No. 63 at 33.

Rather, Durr argues that the meaning of “generally/substantially parallel” would be readily apparent to a layperson as meaning “mostly parallel[,]” and mostly parallel can encompass surfaces that are spaced apart by a distance that changes imperceptibly. *Id.* at 33–34. The Court adopts Durr’s construction.

The term parallel is a familiar one. Most laypersons will have heard the term parallel either in school or in everyday life—*i.e.*, parallel parking. Additionally, it is uncontroversial, both in patent law and everyday life, that “substantially” and “generally” are terms of approximation that avoid numerical boundaries. *See Anchor Wall Sys., Inc.*, 340 F.3d at 1311–12; *Aventis Pharms. Inc.*, 715 F.3d at 1377. Thus, elaborate interpretation of this disputed term is unnecessary because the ordinary meaning is readily apparent even to laypersons, and the Court construes “generally/substantially parallel” to have its plain and ordinary meaning. *Phillips*, 415 F.3d at 1314 (“In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of widely accepted meaning of commonly understood words.”).

However, to the extent EFC argues that the plain and ordinary meaning of “generally/substantially parallel” excludes surfaces that are spaced apart by a distance that changes imperceptibly—*i.e.*, that such surfaces are not “mostly parallel”—the Court finds neither intrinsic nor extrinsic evidence supporting such a limitation. While the extrinsic evidence EFC cites supports that the term “parallel[,]” without a modifier such as “generally” or “substantially,” describes lines and surfaces that are everywhere equidistant and never intersect, *see* ECF No. 65-20 at 47; ECF No. 65-22 at 6, and the intrinsic evidence makes clear that “generally/substantially parallel” surfaces include surfaces that are parallel across most, but not all, of the surface, ECF

No. 1-3 at 4, 8 (describing Figure 2 as including “a deflector **40** which includes a rear surface **42** generally parallel to the perpendicular surface **28** of the bell club” but showing in Figure 2 that the deflector surface becomes curved near the tip and thus is no longer parallel to the overflow surface at that point); ECF No. 1-4 at 4, 8 (same); ECF No. 1-5 at 4, 8 (same); ECF No. 1-6 at 5, 9 (same); ECF No. 1-7 at 4, 8 (same), the Court is not aware of any evidence that clearly excludes from the scope of “generally/substantially parallel” surfaces that are spaced apart by a distance that changes imperceptibly. *See GE Lighting Sols., LLC*, 750 F.3d at 1309 (warning against reading into claim terms limitations from the specification “absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited”).

The Court thus construes “generally/substantially parallel” to have its plain and ordinary meaning.

H. Rear Cover Attached to the Bell Cup or Bell Cup Further Having Attached Thereto a Rear Cover

Claim Term	Durr’s Proposed Construction	EFC’s Proposed Construction
Rear Cover Attached to the Bell Cup Bell Cup Further Having Attached to a Rear Cover	Plain and ordinary meaning	Bell cup and rear cover being separate pieces that have been brought together and secured to one another
Court’s Construction		
Bell cup and rear cover being separate pieces that have been brought together and secured to one another		

The final dispute focuses on what it means to have a rear cover “attached” to the bell cup or, vice versa, a bell cup “attached” to the rear cover. The main area of contention between the parties is whether the bell cup and rear cover must be separate pieces that are then brought

together, as EFC argues, ECF No. 65 at 37, or whether the bell cup and rear cover can be integral with one another, as Durr contends. ECF No. 63 at 35. The Court finds that, based on the claim language and the specification, EFC's construction is the correct one.

The Court first looks to the language of the claims in which the disputed term appears. Claim 8 of the '797 Patent describes a rotary atomizer "comprising: [1] a bell cup, including: [a] a central flat portion leading to a substantially conical overflow surface . . . ; and [b] a deflector . . . ; and [2] a rear cover attached to the bell cup" ECF No. 1-6 at 10. Thus, the structure and language of Claim 8 indicate that the bell cup and the rear cover are two separate pieces that when attached comprise the claimed rotary atomizer. Further supporting that the bell cup and rear cover are separate pieces, Claim 1 of the '813 Patent describes the claimed rotary atomizer as "comprising: a bell cup *including* a front surface and a central flat portion, the front surface extending from the central flat portion to a spray edge; the bell cup further having *attached* thereto a rear cover" ECF No. 1-7 at 9 (emphasis added). Claim 1 uses the term "including" to indicate components that can be integral parts of the bell cup but uses the term "attached" to indicate that the rear cover is not an integral piece. ECF No. 1-7 at 9; *see also* ECF No. 1-6 at 10 (Claim 8 of the '797 Patent also differentiates between "including" and "attached"). Finally, by further limiting how the bell cup and rear cover may be secured to one another, the dependent claims in the '813 Patent indicate that the bell cup and rear cover are separate pieces that are attached by being secured to one another. ECF No. 1-7 at 9 (Claim 5 limiting the claimed rotary atomizer to one where "the rear cover is secured to the bell cup behind the spray edge"); *id.* (Claim 6 limiting the claimed rotary atomizer to one where "the rear cover threadingly engages the hub of the bell cup"); *id.* (Claim 7 limiting the claimed rotary atomizer to one where "the rear cover is welded to the bell cup"). The language of the relevant claims supports that a "rear cover

attached to the bell cup” and a “bell cup further having attached to a rear cover” means the bell cup and the rear cover are separate pieces that have been brought together and secured to one another.

The Court then turns to the specifications. In the specifications, the rear cover is consistently described as a separate piece that is secured to the bell cup. For example, in the summary of the invention section, the specifications state that “[a] rear cover is secured to the rear of the bell cup body, enclosing an annular cavity.” ECF No. 1-6 at 8; ECF No. 1-7 at 7. Additionally, in the detailed description of the preferred embodiments, the specifications describe the rear cover as “threaded onto the threaded portion **34** of the annular hub **33** and welded or glued to the rear of the bell cup **22** behind the spray edge[.]” ECF No. 1-6 at 9; ECF No. 1-7 at 8. Finally, the specification includes preferred manners of attachment for the rear cover—“If the bell cup **22** is titanium, the rear cover **35** is preferably welded to the rear of the bell cup **22** behind the spray edge **32**. If Aluminum is used, the rear cover **35** is preferably glued to the rear of the bell cup **22** behind the spray edge **32**[.]” ECF No. 1-6 at 9; ECF No. 1-6 at 8—which indicates that the bell cup and rear cover are separate pieces that are attached by using some method of securing the two pieces together.

Thus, based on the claim language and the specifications,¹⁵ the Court construes “rear cover attached to the bell cup” and “bell cup further having attached thereto a rear cover” to mean a bell cup and rear cover being separate pieces that have been brought together and secured to one another.

IV. CONCLUSION

For the foregoing reasons, the Court construes the eight disputed terms as follows:

¹⁵ The prosecution history provides no additional clarity, and a review of the extrinsic evidence is unnecessary.

Term	Court's Construction
Paint	A material having fluid properties used in coating applications including solvent based and water based, but not including powder coating
Particulate Material Particulate Paint	A [material or paint] that includes solid particles
Substantially Continuous	A single, uninterrupted surface that is smooth (<i>i.e.</i> , contains no hard transitions)
Conical	Plain and ordinary meaning
Generally Conical Substantially Conical	A surface that consists of one or more conical portions but without undulations or curved portions (<i>e.g.</i> , a surface consisting of portions of two cones, etc.)
Generally Constant Substantially Constant	Consisting of one or more distinct angles, which neither vary continuously or oscillate, and which do not form a lip
Generally Parallel Substantially Parallel	Plain and ordinary meaning
Rear Cover Attached to the Bell Cup Bell Cup Further Having Attached to a Rear Cover	Bell cup and rear cover being separate pieces that have been brought together and secured to one another

Date: November 8, 2021

/s/
GEORGE J. HAZEL
United States District Judge